R9-9 Verification of User Privileges

NPAC SMS shall verify whether the user requesting the report has the proper viewing privileges for the selected data.

R9-10 Support of On-line File Transfer

NPAC SMS shall support on-line file transfer capabilities to transfer report files.

R9-11 Transaction History Log

NPAC SMS shall maintain a History Log to keep track of transactions processed.

R9-12.1 Error Log - Transaction Errors

NPAC SMS shall maintain an Error Log to keep track of transaction errors.

R9-12.2 Error Log - Transmission Errors

NPAC SMS shall maintain an Error Log to keep track of transmission errors.

R9-12.3

(Duplicate - refer to RX9-5 number 20)

R9-13

(Duplicate - refer to R9-2)

10. Performance and Reliability

This section defines the reliability, availability, performance and capacity requirements for the NPAC SMS. The NPAC SMS will be designed for high reliability, including fault tolerance and data integrity features, symmetrical multi-processing capability, and allow for economical and efficient system expansion.

Note that throughout this section, "downtime" refers to the unavailability of the NPAC service. This is to be distinguished from cases where users can still switch to a backup machine.

The following are the availability, reliability, performance and capacity requirements for the NPAC SMS system.

10.1 Availability and Reliability

R10-1 System Availability

NPAC SMS shall be available 24 hours a day, 7 days a week with the exception of scheduled downtime and unscheduled downtime within the time frame defined in R10-3 and R10-5.

R10-2 System Reliability

NPAC SMS shall be 99.9 percent reliable. This applies to functionality and data integrity.

R10-3 Unscheduled Downtime

NPAC SMS shall have unscheduled downtime per year less than or equal to 9 hours.

R10-4 Mean Time to Repair for Unscheduled Downtime

NPAC SMS shall support a mean time to repair of less than or equal to 1 hour, for unscheduled downtime.

R10-5 Scheduled Downtime

NPAC SMS shall have NPAC initiated, scheduled downtime of less than or equal to 24 hours per year.

AR10-1 Scheduled Downtime

NPAC initiated downtime as defined in R10-5 does not include downtime needed for software release updates initiated by or collectively agreed to by the Service Providers.

R10-6.1 Communication Link Monitoring

NPAC shall be capable of monitoring the status of all of its communication links.

R10-6.2 Detecting Communication Link Failures

NPAC shall be capable of detecting and reporting all communication link failures.

R10-7 Detecting Single Bit Data Transmission Errors

NPAC SMS shall be capable of detecting and correcting single bit errors during data transmission between hardware components (both internal and external).

R10-8 Continue Transaction Processing After Downtime

NPAC SMS shall complete processing of all sending transactions at the time of system failure when the NPAC SMS resumes processing.

R10-9.1 Self Checking Logic

NPAC SMS shall support functional components with on board automatic self checking logic for immediate fault locating.

R10-9.2 Continuous Hardware Checking

NPAC SMS shall support continuous hardware checking without any performance penalty or service degradation.

R10-9.3 Duplexing of Hardware

NPAC SMS shall support duplexing of all major hardware components for continuous operation in the event of a system hardware failure.

R10-9.4 Transparent Hardware Fault Tolerance

NPAC SMS shall support hardware fault tolerance that is transparent to the Service Providers.

R10-10.1 Service Provider Notification of System Unavailability

NPAC SMS shall notify Service Providers of the system unavailability via both the NPAC SMS to Local SMS interface and the SOA to NPAC SMS interface if the system becomes unavailable for normal operations due to any reason, including both scheduled and unscheduled maintenance.

R10-10.2 System Availability Notification Method

NPAC SMS shall notify Service Providers via their contact numbers if electronic communication is not possible.

R10-10.3 System Availability Notification Contents

NPAC SMS shall include the following information in the notification:

- The reason for the downtime
- When the down time will start

- When the down time will stop
- An NPAC contact number

R10-11 Updates Highest Priority

NPAC SMS shall ensure the capability of receiving, processing and broadcasting updates will be given the highest priority during any maintenance, if resources allow only partial functionality.

R10-12.1 Tolerance to Communication Link Outages

NPAC SMS shall provide tolerance to communication link outages and offer alternate routing for such outages.

R10-12.2 Alternate routing

NPAC SMS shall offer alternate routing during communication link outages.

R10-13.1 Switch to Backup or Disaster Recovery Machine

NPAC SMS shall, in cases where Service Providers have been switched to a backup or disaster recovery machine, adhere to a maximum time to repair of 4 hours for the primary machine.

R10-13.2 Time to Switch Machines

NPAC SMS shall ensure that the time to switch the Service Providers to another machine and provide full functionality must not exceed the mean time to repair.

R10-13.3 Total Disaster Recovery

NPAC SMS shall restore the capability of receiving, processing and broadcasting updates within 24 hours in the event of a disaster that limits the ability of both the NPAC and NPAC SMS to function.

R10-13.4 Full Functionality Restored

NPAC SMS shall restore full functionality within 48 hours, in the event of a disaster that limits both the NPAC and NPAC SMS ability to function.

R10-14 Reports on Reliability

NPAC shall provide reliability reports documenting the following:

- Schedule down time
- Unscheduled down time
- Mean time to repair
- System availability on a monthly basis to the Service Provider

10.2 Capacity and Performance

R10-15

DELETE

A10-1

DELETE

R10-16 Capacity

NPAC SMS will have the capacity to support a user group in the NPAC sized for the region they service.

R10-17

DELETE

A10-2

DELETE

R10-18 History File Data Storage

NPAC SMS shall ensure that the data storage of the History file must keep track of all transactions made for a tunable parameter period of time (default of one year).

A10-3

DELETE

R10-19 Broadcast Update Response Time

NPAC SMS shall ensure that from the time an activation notice, modification or deletion request is received from a Service Provider until the time the broadcast of the update is started to all Service Provider local SMS will be less than 60 seconds.

R10-20 Request/Transaction Response Time

NPAC SMS, under normal operating conditions, shall ensure that the response time from when a request or transaction is received in the system to the time an acknowledgment is returned will be less than 3 seconds for 95% of all transactions. This does not include the transmission time across the interface to the Service Providers' SOA or Local SMS.

R10-21 Future System Growth

NPAC SMS shall be expandable to handle future growth due to circumstances described as follows:

- Added areas of portability
- Added Service Providers

10.3 Requirements in RFP Not Given a Unique ID

RN10-1

DELETE

RN10-2 Return to the Primary Machine SOA Notification

NPAC SMS shall send an electronic notification to the Service Provider's SOA indicating the time the NPAC will switch them back to the primary machine.

RN10-3 Return to the Primary Machine Local SMS Notification

NPAC SMS shall send an electronic notification to the Service Provider's Local SMS indicating the time the NPAC will switch them back to the primary machine.

RN10-4 Database Sync After Return to the Primary Machine

NPAC SMS shall sync up the database in its primary SMS with any updates sent to the backup or disaster recovery machine during the downtime.

11. Billing

A11-1

DELETE

A11-2 Accounting Measurements Will Not Degrade the Basic System Performance

The resource accounting measurements will not cause degradation in the performance of the basic functions of the NPAC.

11.1 User Functionality

R11-1 Toggling the Generation of Usage Measurements

NPAC SMS shall allow the NPAC administrator to turn on and off the recording of Service Provider usage statistics for the service elements.

11.2 System Functionality

R11-2 Generating Usage Measurements for NPAC Resources

NPAC SMS shall measure and record the usage of NPAC resources on a per Service Provider basis.

R11-3 Generating Usage Measurements for Allocated Connections

NPAC SMS shall generate usage measurements for allocated connections for each Service Provider.

R11-4 Generating Usage Measurements for Allocated Mass Storage

NPAC SMS shall generate usage measurements for the allocated mass storage (number of records stored) for each Service Provider.

R11-5 Generating Usage Measurements for the Number of Messages Processed by type

NPAC SMS shall measure the number of messages processed by type for each Service Provider.

R11-6 Generating Usage Measurements for the Number of Messages Downloaded

NPAC SMS shall measure the number of messages downloaded to each Service Provider.

R11-7

(Duplicate - refer to RX11-5)

R11-8 Generating Detailed Usage Measurement Reports

NPAC shall produce detailed NPAC usage reports for the contracting entity.

R11-9 Billing Report Types

NPAC SMS shall be capable of creating the following billing reports:

- Login Session Per Service Provider
- Allocated Mass Storage
- Messages Processed by type (to include download data and data resent by request)
- Audits Requested and Processed
- Requested Report Generation
- Service Establishment (to include Service Provider establishment, user login ID addition to the NPAC SMS, and mechanized Interface Activation)

R11-10 Full Billing Report

The NPAC SMS shall be capable of creating a full billing report, with all of the report types in R11-9 included.

R11-11 Billing Report Creation by NPAC Personnel

NPAC SMS shall allow NPAC personnel to create billing reports for all Service Provider usage. For all report types in R11-9 and R11-10, the NPAC personnel will be able to specify whether the report is an aggregation/summary of stored data or a detailed report containing every item stored for the report type.

R11-12 Billing Report Creation by Service Provider

NPAC SMS shall allow Service Providers to gather billing report data on only their NPAC SMS usage. Service Providers will not be able to create reports on any other Service Provider's usage. For all report types in R11-9 and R11-10, the NPAC SMS shall create an aggregation/summary of stored data for the report type.

R11-13 NPAC Personnel Billing Report Destination

NPAC SMS shall allow NPAC personnel to determine the output destination of the billing report. The destinations will include: on-line (on screen), printer, file, or FAX. The default selection is on-line.

R11-14 Service Provider Billing Report Destination

NPAC SMS shall allow Service Provider users to determine the output destination of the billing report. The destinations will include: on-line (on screen) or file. The default selection is on-line.

R11-15 NPAC Personnel Only Can Access Billing System

The NPAC billing system shall be accessible only to NPAC personnel.

Appendix A. Business Process Flow Diagrams

This appendix contains pictorial representations of the business process flows discussed in Section 2, *Business Process Flows*, on page 1.

NPAC Business Process Flows

- 2.1 Provision Service
  - 2.1.2 Subscription Version Creation
  - 2.1.4 Activation
- 2.2 Service Disconnection
- 2.3 Service Repair
- 2.4 NPAC SMS Conflict Process
- 2.5 Disaster Recovery
- 2.6 Service Order Cancellation
- 2.7 Audit Requests
- 2.8 Report Request

Legend

Process	NPAC SMS Sub-process Flow Reference
Process	Service Provider Process (External To NPAC SMS)
Pre-defined process	NPAC SMS Personnel Manual Process
Terminator	Point of Process Termination
Decision	Process Decision
Connect	Connector To Another Process

Figure 0-1 NPAC Business Process Flows Legend

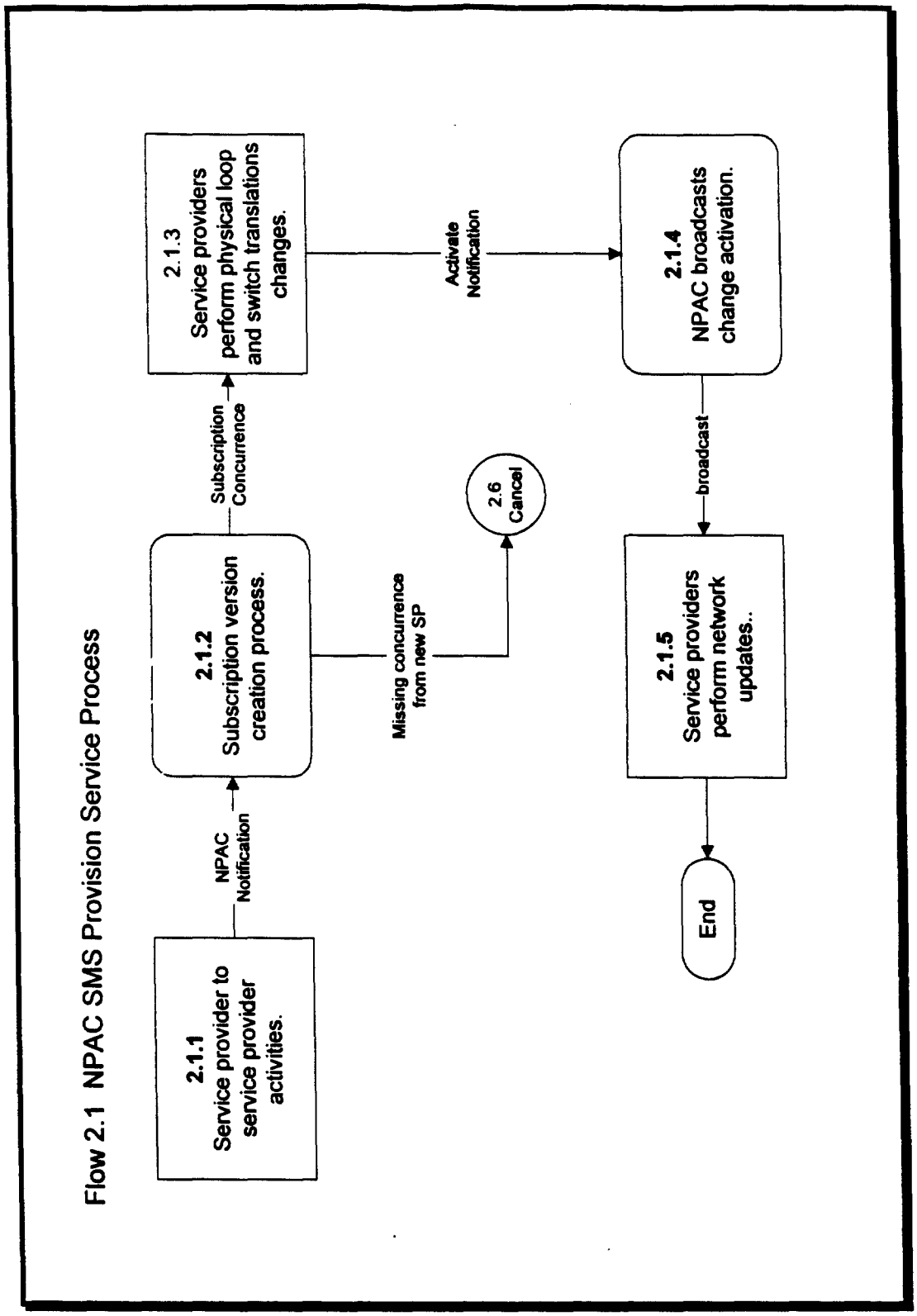

Figure 0-2 Flow 2.1 NPAC SMS Provision Service Process

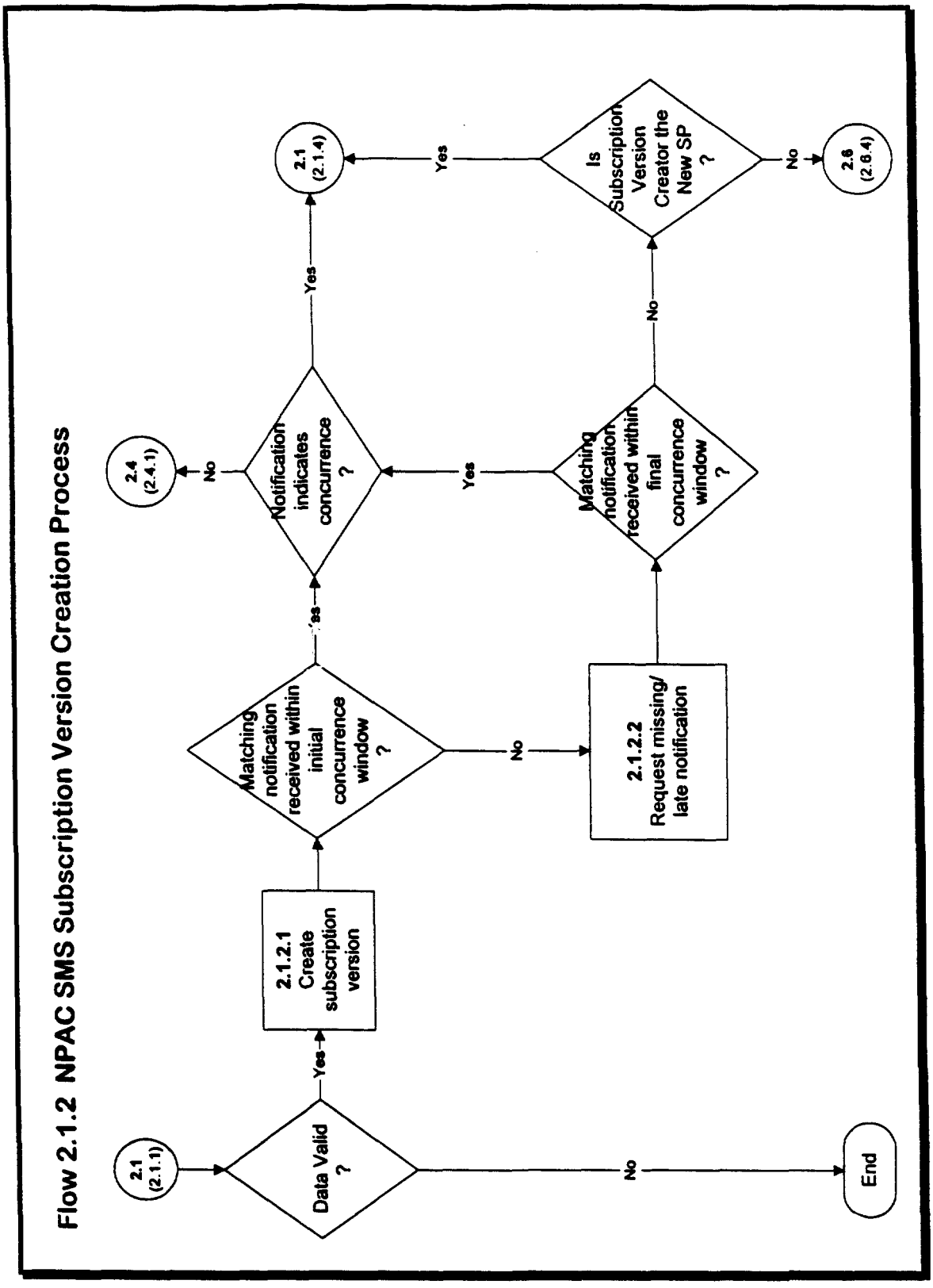

Figure 0-3 Flow 2.1.2 NPAC SMS Subscription Version Creation Process

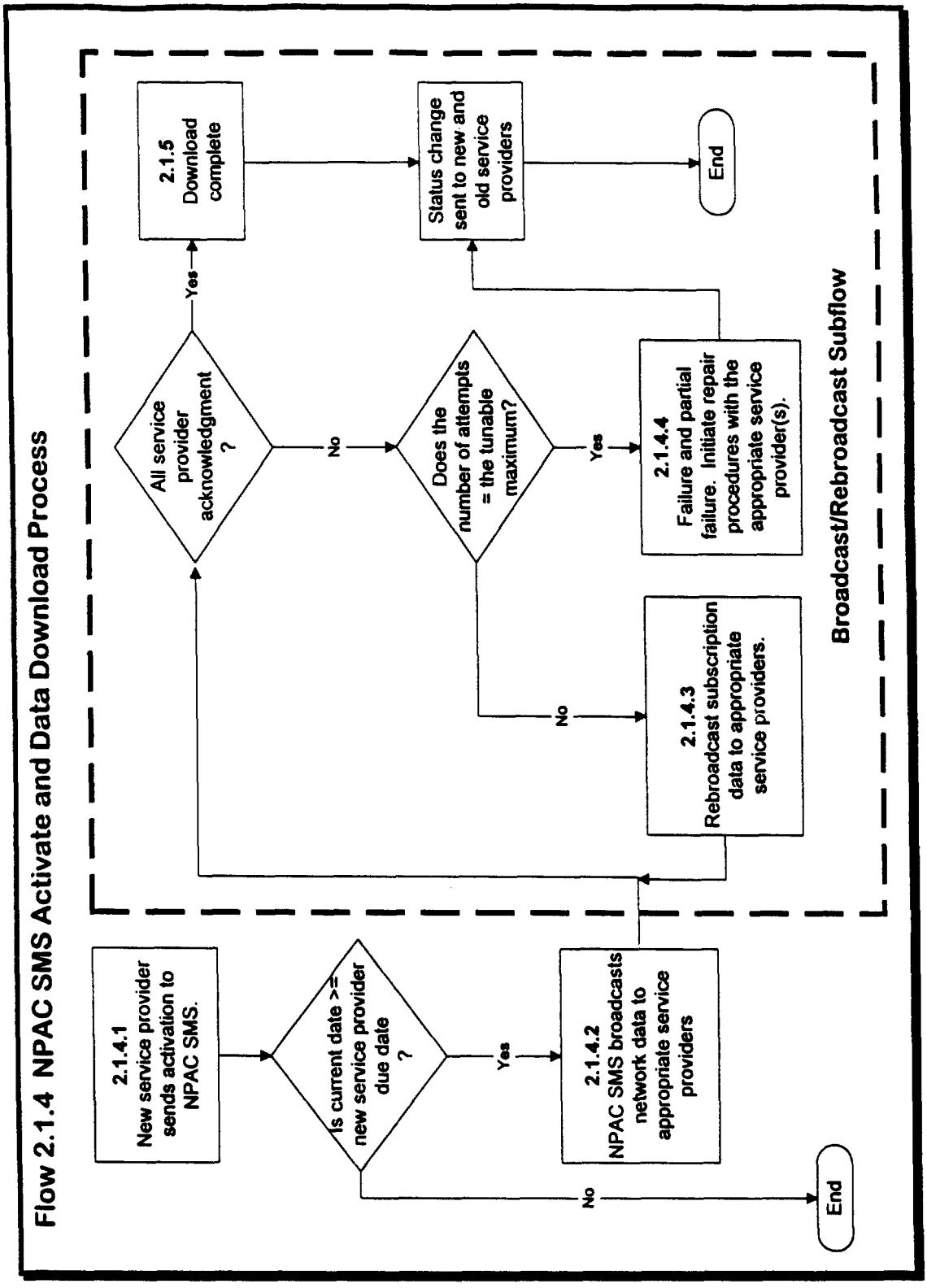

Figure 0-4 Flow 2.1.4 NPAC SMS Activate and Data Download Process

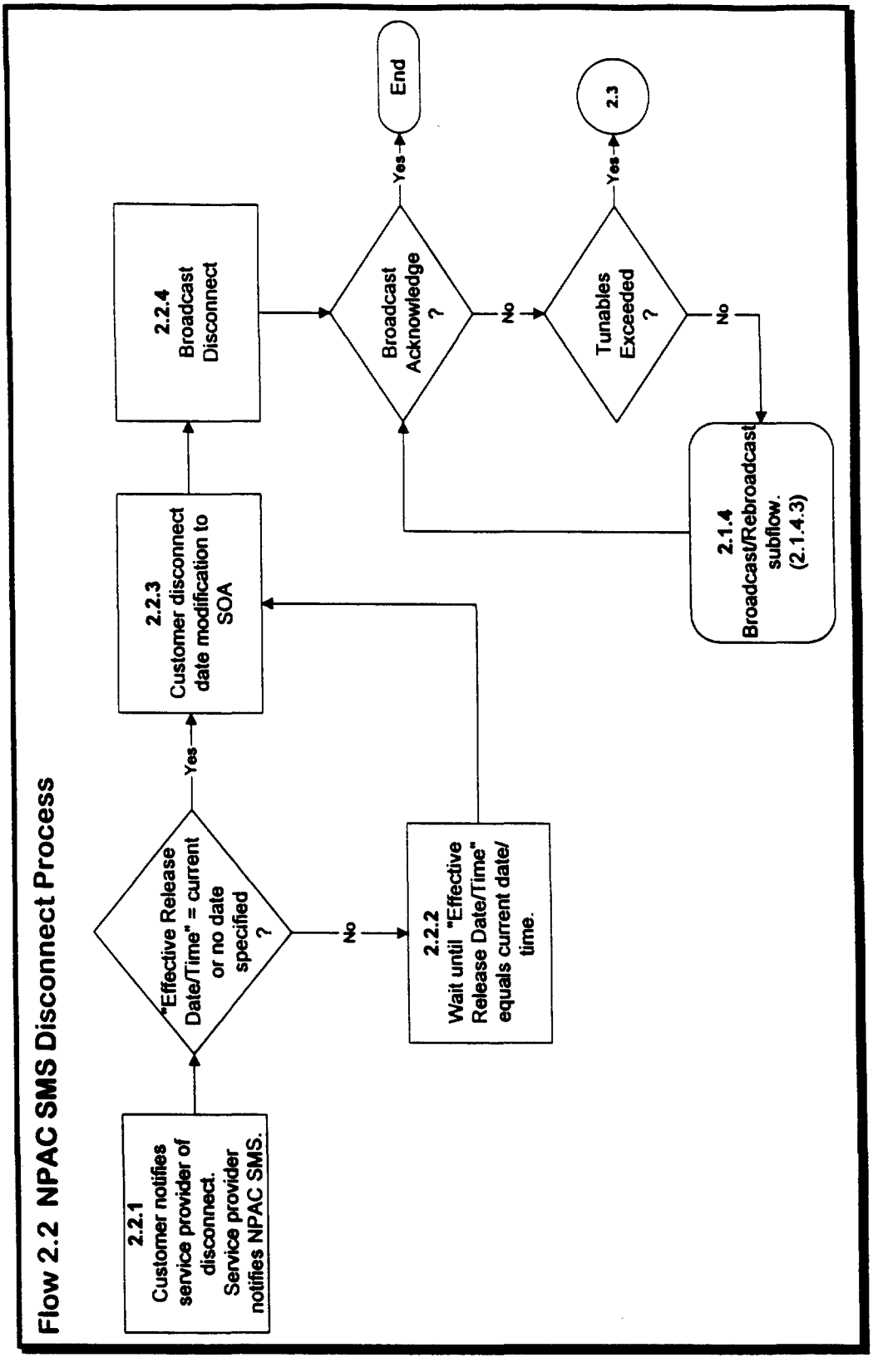
Flow 2.2 NPAC SMS Disconnect Process
2.2.1 Customer notifies service provider of disconnect. Service provider notifies NPAC SMS.
"Effective Release Date/Time" = current or no date specified ?
Yes
No
2.2.2 Wait until "Effective Release Date/Time" equals current date/ time.
2.2.3 Customer disconnect date modification to SOA
2.2.4 Broadcast Disconnect
Broadcast Acknowledge ?
Yes
No
End
Tunables Exceeded ?
Yes
No
2.3
2.1.4 Broadcast/Rebroadcast subflow. (2.1.4.3)

Figure 0-5 Flow 2.2 NPAC SMS Disconnect Process

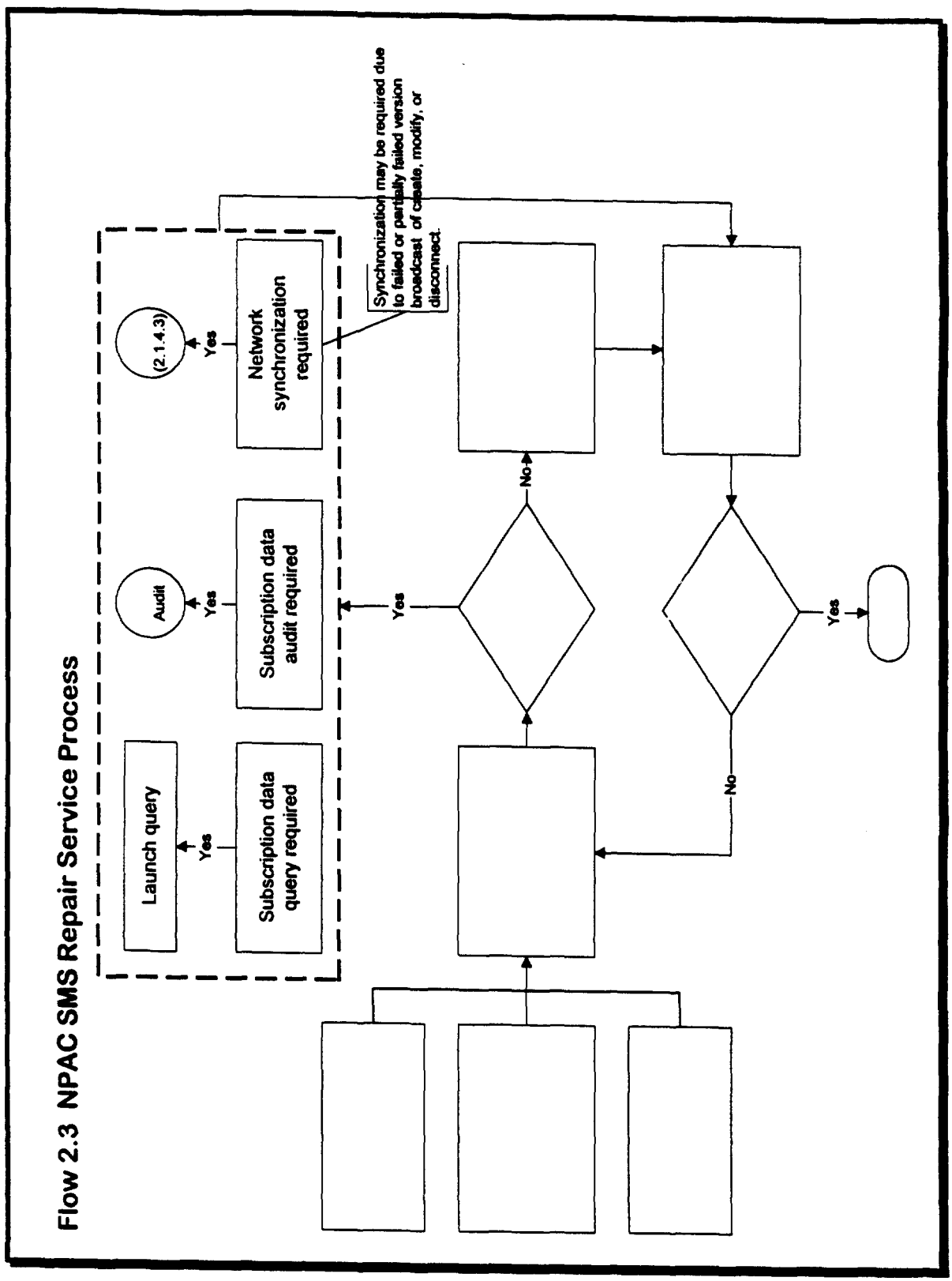

Figure 0-6 Flow 2.3 NPAC SMS Repair Process

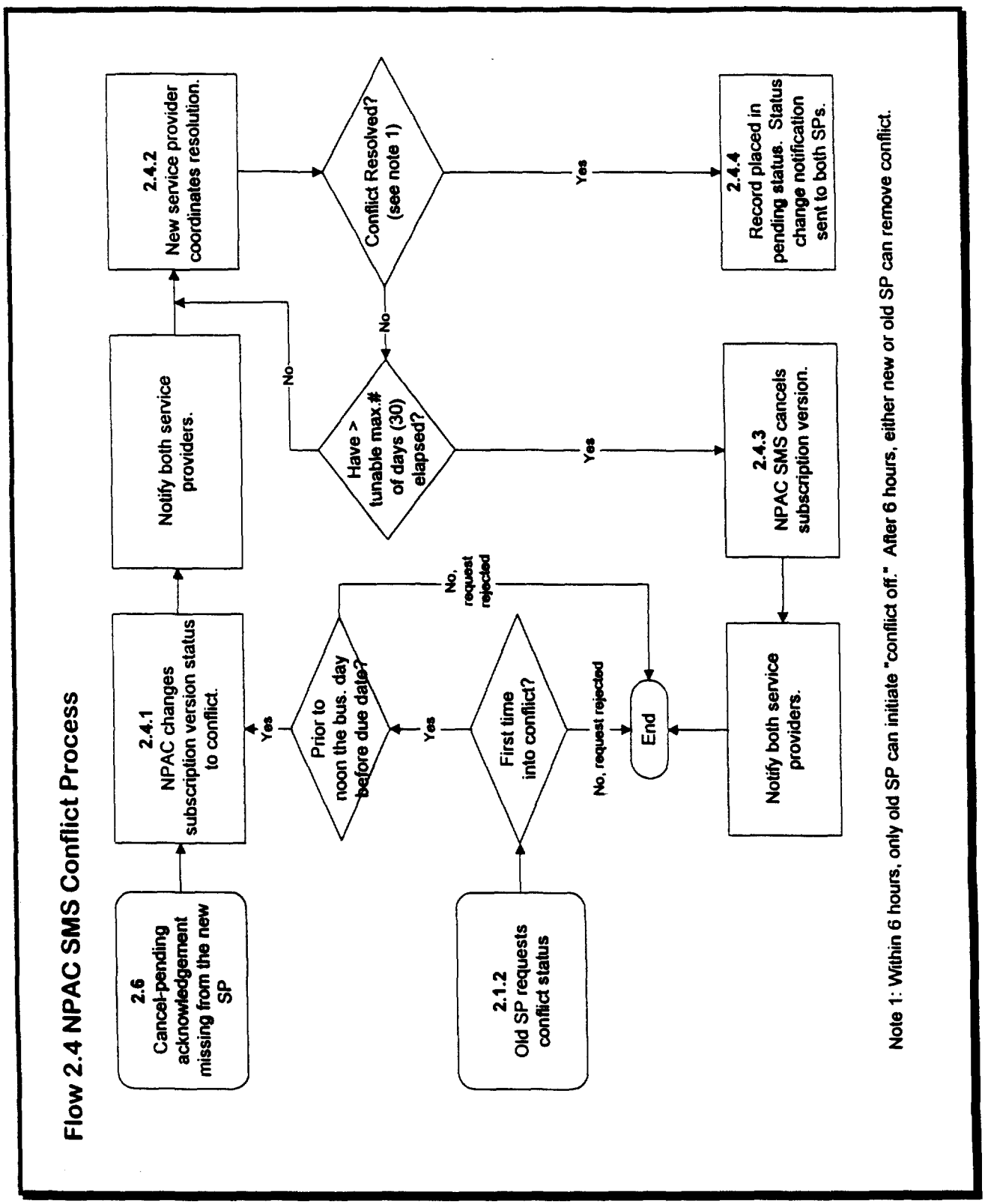

Figure 0-7 Flow 2.4.1 Conflict Process

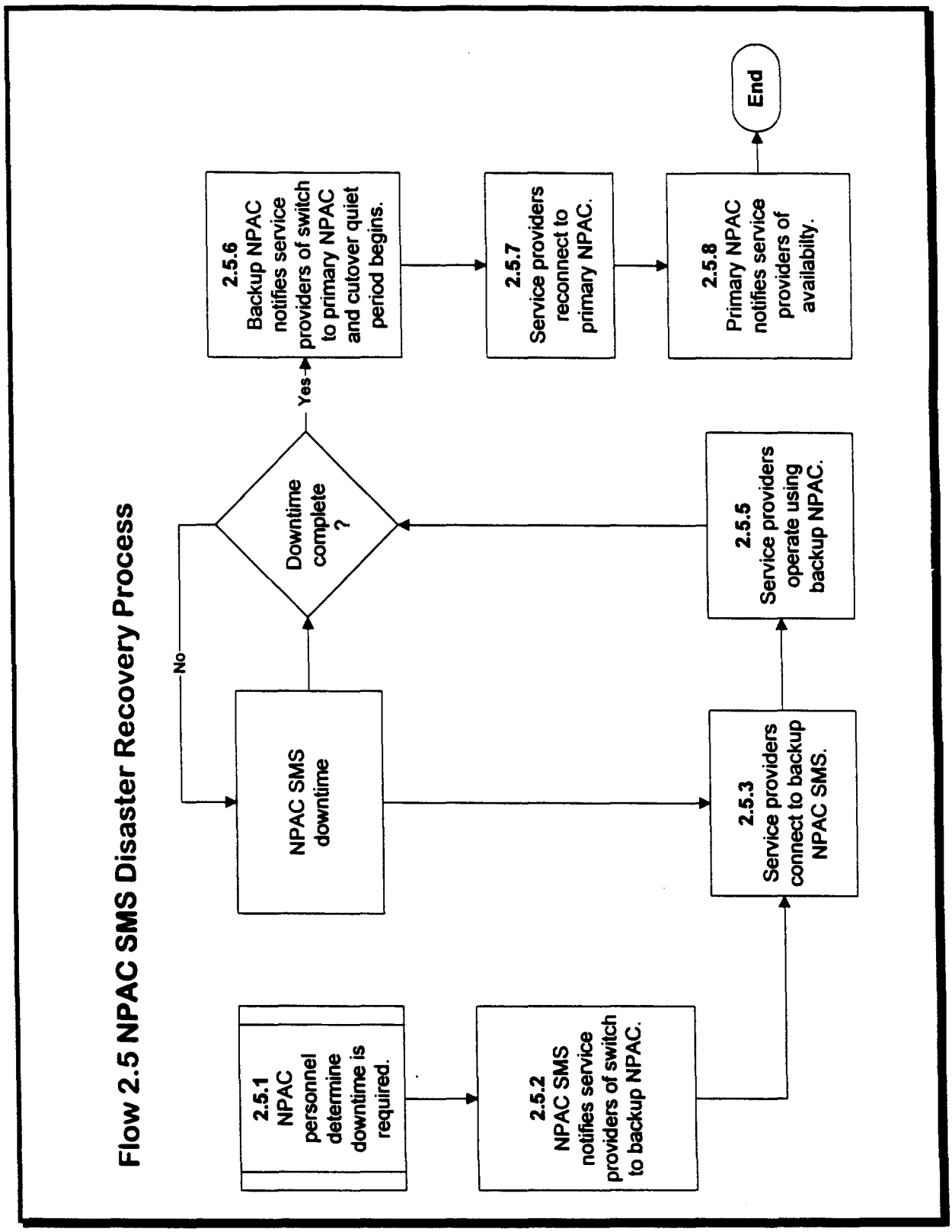

Figure 0-8 Flow 2.5 NPAC SMS Disaster Recovery Process

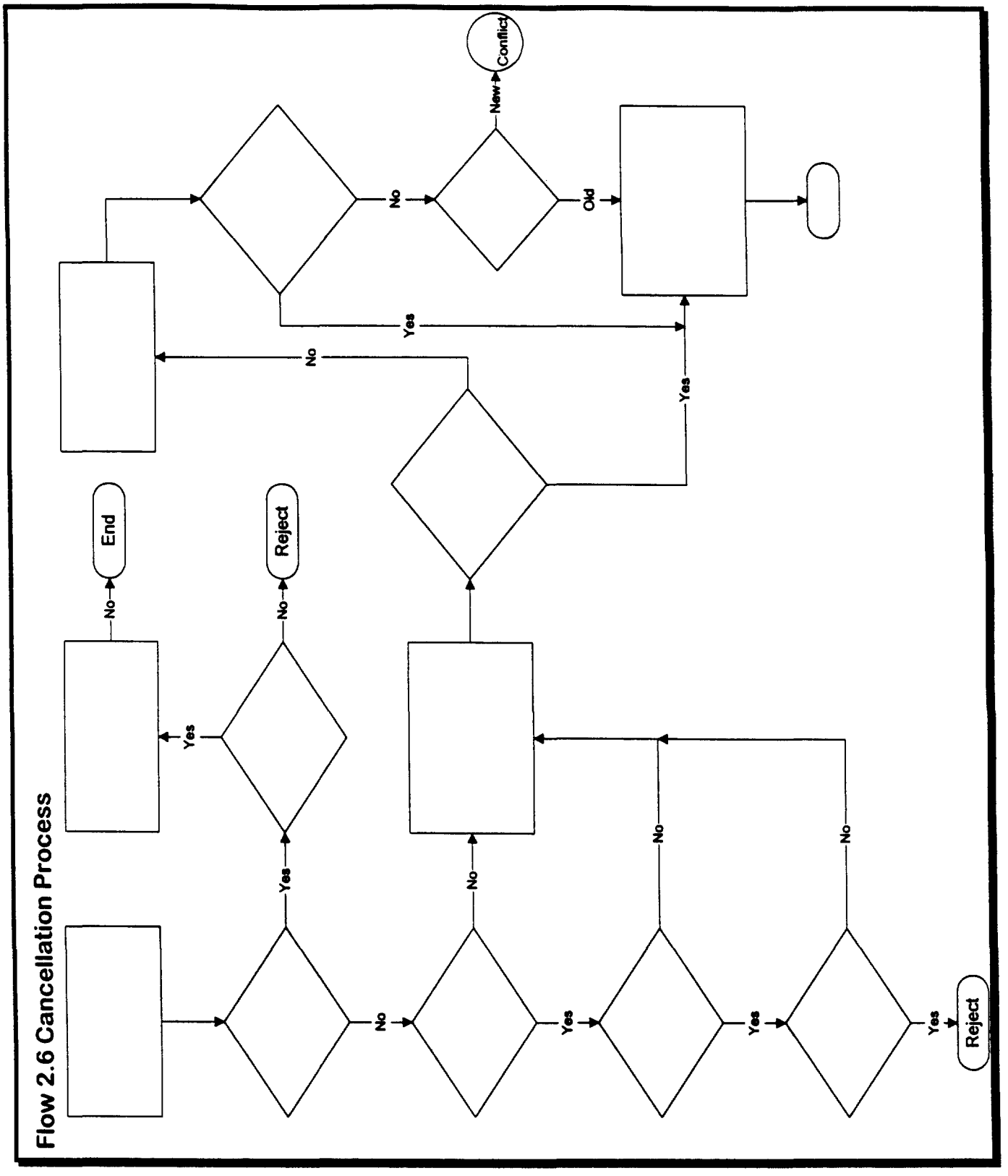

Figure 0-9 Flow 2.6 Cancellation Process

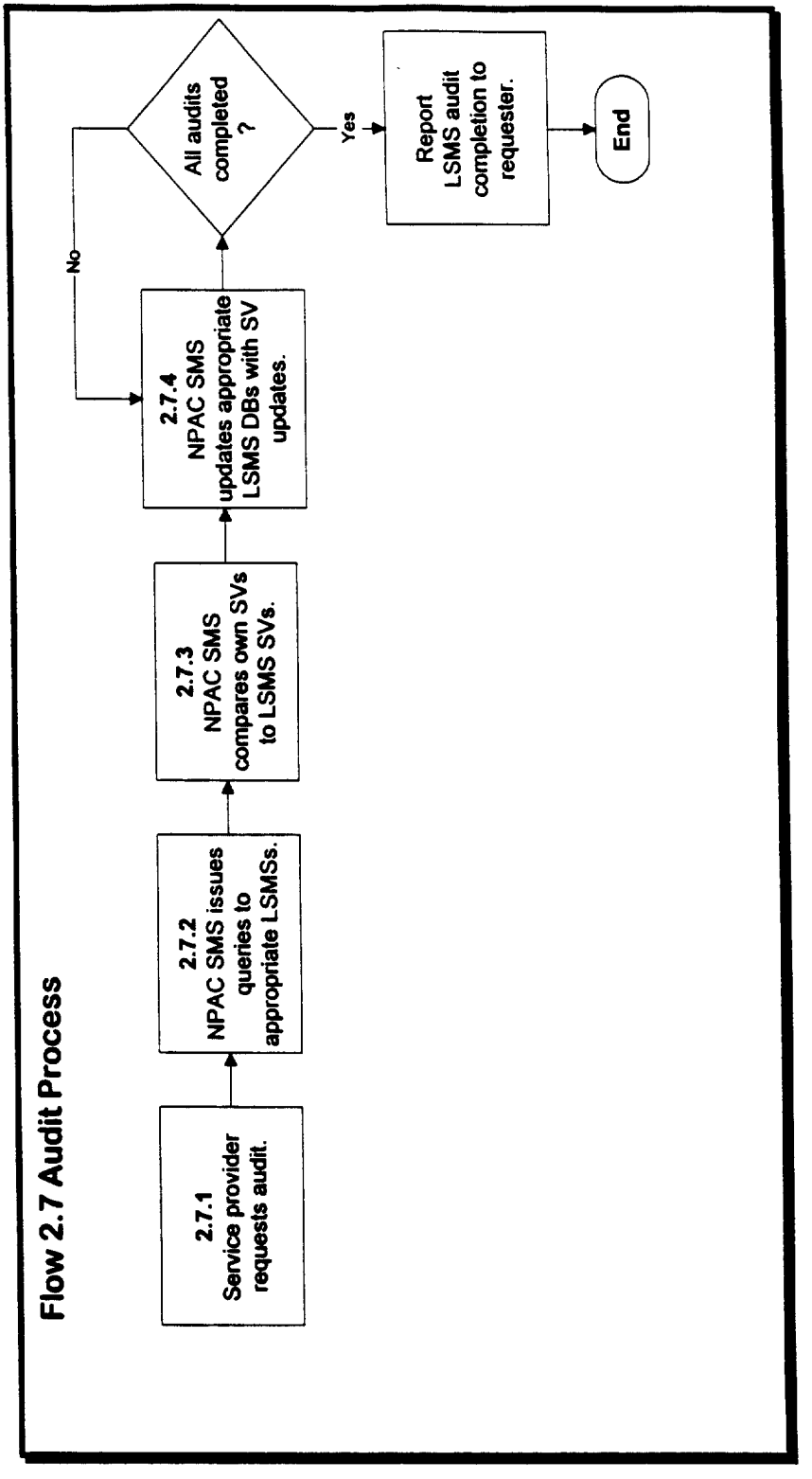

Figure 0-10 Flow 2.7 Audit Process

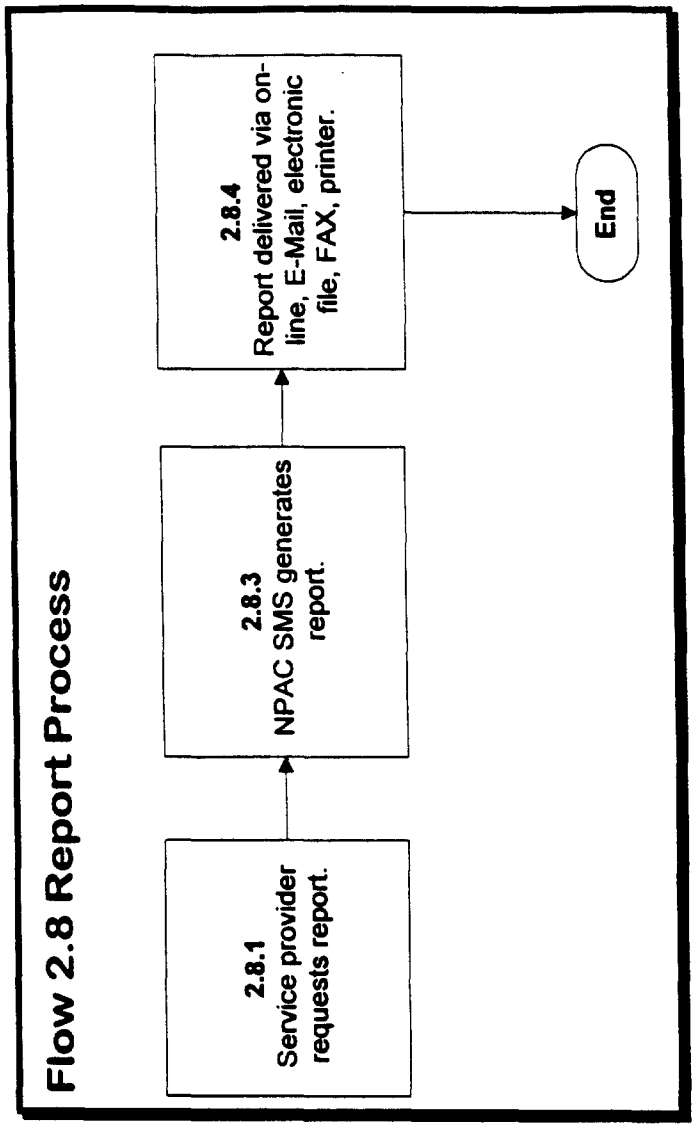

Figure 0-11 Flow 2.8 Report Process

Appendix B. Glossary

This glossary provides a comprehensive list of definitions and acronyms that apply to NPAC SMS.

CLASS	Custom Local Area Signaling Services. Premium local service features, such as call forwarding or automatic callback.
CMIP	Common Management Information Protocol
CMISE	Common Management Information Service Element
CNAM	Caller Id with Name
DPC	Destination Point Code
FR	Frame Relay
GDMO	Guideline for Definitions of Managed Objects
GMT	Greenwich Mean Time
GTT	Global Title Translation
ICC	Illinois Commerce Commission
ISO	International Organization of Standardization
ISVM	Inter-Switch Voice Mail
LERG	Location Exchange Routing Guide
LIDB	Line Information Database
LNP	Local Number Portability
LRN	Location Routing Number. A routing number in the same form as a TN used to identify the TN's serving switch when the TN is a ported number.
LSMS	Local Service Management System
LISP	Local Intra-Service Provider Portability. Movement of end-user TN from one switch to another, but within the same Service Provider's Network.
LSPP	Local Service Provider Portability. Movement of end user TN from one Service Provider to another Service Provider.
MAC	Media Access Control
MD5	Message Digest (Version 5)
NANP	North American Numbering Plan. A 10-digit numbering scheme used in North America to uniquely identify a directory number.
NPA	An NPA code is the first three digits of the 10-digit destination number for all inter-NPA

	calls within the North America Numbering Plan Area.
NPAC Customer	Any customer of the NPAC SMS.
NPAC SMS	Number Portability Administration Center and Service Management System
NSAP	Network Layer Service Access Point
NXX	A code normally used as a central office code. It may also be used as an NPA code or special NPA code.
OCN	Operating Company Number
OSI	Open Systems Interconnect
PKCS	Public Key Crypto System
Ported TN	A TN ported to a switch that is not the NANP-assigned switch.
PPP	Point-To-Point Protocol
PSAP	Presentation Layer Service Access Point
RFP	Request for Proposal
RSA	A popular encryption algorithm whose name is derived from the initials of its inventors: Rivest, Shamir, and Adelman.
SCP	Service Control Point
SMS	Service Management System
SOA	Service Order Activation
SP	Service Provider. Generally refers to a facilities-based user of the NPAC SMS.
SSAP	Session Layer Service Access Point
SSN	Subsystem Number
TN	Telephone Number
TSAP	Transport Layer Service Access Point
Version	Time-sensitive or status-sensitive instance of a subscription.

Appendix C. System Tunables

This appendix provides a comprehensive list of tunables identified throughout the FRS and their default values.

SUBSCRIPTION TUNABLES				
Tunable Name	**Tunable Variable Name**	**Default Value**	**Units**	**Valid Range**
Initial Concurrence Window	SP_Initial_Concurrence_Window	18	business hours	1-72
The hours subsequent to the time the subscription version was initially created by which both Service Providers are expected to authorize transfer of service if this is an Inter-Service Provider port.				
Final Concurrence Window	SP_Final_Concurrence_Window	18	business hours	1-72
The number of hours after the concurrence request is sent by the NPAC SMS by which time both Service Providers are expected to authorize transfer of subscription service for an Inter-Service Provider port.				
Conflict Expiration Window	SV_Conflict_Cancellation_Window	30	calendar days	1-180
The length of time conflict subscriptions will remain in the conflict state before cancellation.				
Maximum Subscriber Query	Max_Subscriber_Query	50	records	10-150
The maximum number of active subscription versions returned by a query to the NPAC.				
Pending Subscription Retention	Pending_SV_Cancellation	90	calendar days	1-180
The length of time pending subscriptions will remain in the pending state before cancellation.				
Conflict Restriction Window	Conflict_Restriction_Window	12	HH:MM	00:00-24:00
The time on the business day prior to the New Service Provider due date that a Subscription version is no longer allowed to be set to conflict by the Old Service Provider.				
Conflict Resolution New Service Service Provider Restriction	New_SP_Conflict_Resolution_Restriction	6	business hours	1-72

SUBSCRIPTION TUNABLES				
Tunable Name	**Tunable Variable Name**	**Default Value**	**Units**	**Valid Range**
The number of business hours after the subscription version is put into conflict that the NPAC SMS will prevent it from being removed from conflict by the new Service Provider.				
Cancellation-Initial Concurrence Window	Cancellation_Initial_Ack_Window	9	business hours	1-72
The numbers of hours after the version is set to cancel pending by which both Service Providers are expected to acknowledge the pending cancellation.				
Cancellation-Final Concurrence Window	Cancellation_Final_Ack_Window	9	business hours	1-72
The number of hours after the second cancel pending notification is sent by which both Service Providers are expected to acknowledge the pending cancellation.				
Old Subscription Retention	Purge_Old_SV	18	calendar months	1-36
The length of time old subscriptions will be retained.				
Cancel-Pending Subscription Retention	Purge_Canceled_Pending_SV	90	calendar days	1-360
The length of time canceled subscriptions, with last status of pending, will be retained.				
Cancel-Conflict Subscription Retention	Purge_Canceled_Conflict_SV	30	calendar days	1-360
The length of time canceled subscriptions, with last status of conflict, will be retained.				
Cancel-Disconnect Pending Retention	Purge_Canceled_Disconnect_Pending_SV	90	calendar days	1-360
The length of time canceled subscriptions, with last status of disconnect pending, will be retained.				
Business Day Duration	Business_Day_Duration	12	calendar hours	1-24
The number of hours from the tunable business day start time.				
Business Day Start Time	Business_Day_Start	07:00 CST	hh:mm	00:00 - 24:00
The start of the business day in Central Standard Time.				